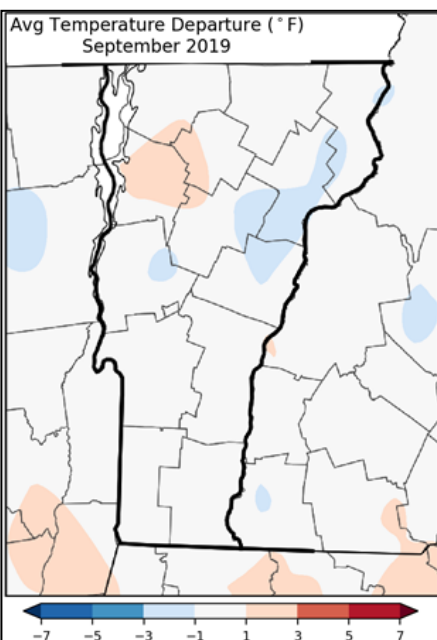
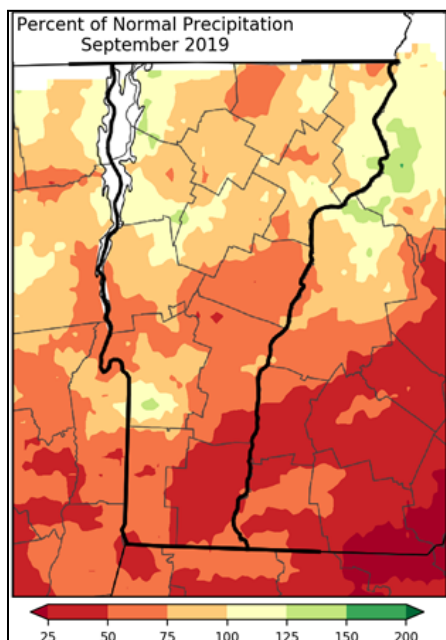


Vermont Forest Health

Insect and Disease Observations – September 2019

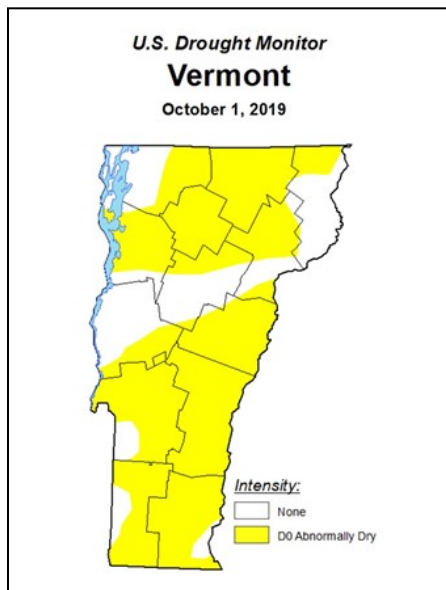
Department of Forests, Parks & Recreation
September/October 2019 vtforest.com

September Weather: Pretty and Pretty-Near Normal



The unusual thing about the weather in September is that there was not much unusual about it. Temperature stayed at just about normal throughout the state. Precipitation was also close to average in a lot of Vermont. It was increasingly dry towards the southeast, however, and on top of a generally dry August, the result was an abnormally dry rating in most of the state. By the end of the September overnight frosts had visited many parts of the state.

The weather set the stage for an on-schedule arrival of fall colors, with full color in northeastern Vermont by the end of the month and on its way everywhere else. Throughout the state red maples have been outdoing themselves to live up to their name.



September precipitation and temperature departure from normal; and drought conditions at the end of September. Maps: [Northeast Regional Climate Center](#) (above) and [National Drought Mitigation Center](#) (left)

*Red maples have been demonstrating how they earned their name.
Photo: J. Esden*

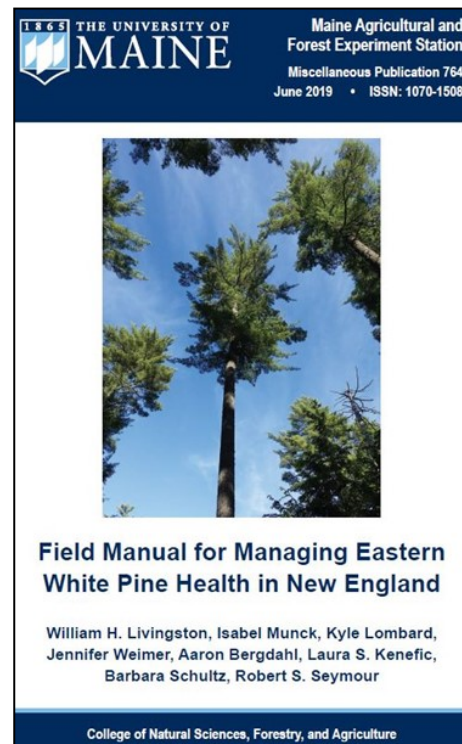


The annual **fall interior needle browning** on conifers has also drawn attention this year. A very **heavy seed crop on white cedar**, in addition to seasonal interior needle loss is giving them an extra yellow appearance.

The fact that there were interior needles remaining on white pines into the fall is good news. Premature needle drop was widespread in the early summer following heavy **white pine needle damage** this spring. In fact, the US Forest Service summary of spring needle damage in monitoring plots crossing four New England states indicates that symptoms in 2019 were the most severe since annual monitoring began in 2012.

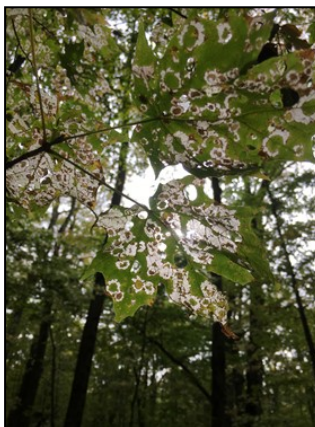
Information about identifying and evaluating white pine needle damage, as well as white pine weevil, blister rust, bast scale, Caliciopsis canker, and red ring rot, is summarized in the new **Field Manual for Managing Eastern White Pine Health in New England**. The manual also outlines silvicultural practices that can reduce risks of health problems and improve white pine productivity.

A new Field Manual for Managing Eastern White Pine Health in New England is now available through the [University of Maine](#).



What's Causing Thin Crowns? Foliage Feeders, Fungi, Fruiting, and other Factors

As mentioned in our **August update**, we have been observing scattered areas of thin-crowned hardwoods, including some patches with generally brown foliage. Ground checks confirmed that a variety of factors is responsible. In many areas throughout the state, **Maple Leaf Cutter** is the culprit. These insects have now returned to the forest floor, a "**fall migration at your feet**" described (including video) in Bryan Pfeiffer's recent blog. However, in some of the stands there is no sign of maple leaf cutter. We do see a **heavy seed crop** on sugar maple, which has now turned brown. Some trees with heavy seed had unusually small leaves in the upper crown, and some of these have dropped. In addition, some foliage that was infected by **anthracnose** in the spring has shriveled and/or fallen prematurely.



Some patches of brown hardwood foliage are due to maple leaf cutter (left and center). In other areas the brown appearance is due to heavy seed and the associated thin foliage (right) or anthracnose. Photos: E. Meacham; J. Halman; B. Schultz

The most commonly observed caterpillars in September have been the tussock moth caterpillars, especially the **hickory tussock**, *Lophocampa caryae*, and the **spotted tussock**, *Lophocampa maculata*. The website, iNaturalist, reflects this with 98 observations of hickory tussock reported in in September 2019 in Vermont and 50 of the spotted tussock. There have been multiple reports of dozens observed at a time, but no reports of significant defoliation. There has been some heavy defoliation of sycamores by the **sycamore tussock moth**, *Halysidota harrisii*, in southeastern Vermont. Tussock moth caterpillars feature hairy “pencils” sticking out from their bodies, and their hairs may be irritating to some people.



Hickory tussocks (far left) and spotted tussocks (center) were commonly observed statewide. However, the sycamore tussock was the only tussock moth caterpillar observed causing significant defoliation (right). Photos: Bruce Watt, University of Maine, Bugwood.org; Whitney Cranshaw, Colorado State University, Bugwood.org; A. Pluhar



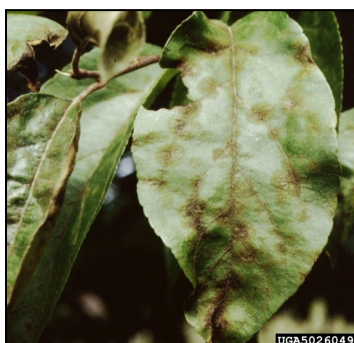
White ash leaf drop was noticeable on scattered trees by the end of the month. Although dryness in 2019 has not risen to the level of **drought**, it's still a likely explanation. Ash is a water-spending species during periods of active growth. Shedding foliage prematurely conserves water and contributes to drought tolerance.

Premature leaf drop of white ash is likely due to dry conditions. Photo: B. Schultz



We're still seeing **fall webworm** nests everywhere, although the insects have left these nests to pupate in sheltered locations, including litter or bark crevices.

Meanwhile, **apple scab** has led to defoliation of ornamental flowering crabs and wild apples.



Fall webworm nests are noticeable (left), but the insects are now in their overwintering pupa stage (top right). Apple scab (bottom right) has caused some premature leafdrop. Photos: R. Kelley; Lacy L. Hyche, Auburn University, Bugwood.org; Jody Fetzer, MD Nat. Capital Park & Planning Comm., Bugwood.org

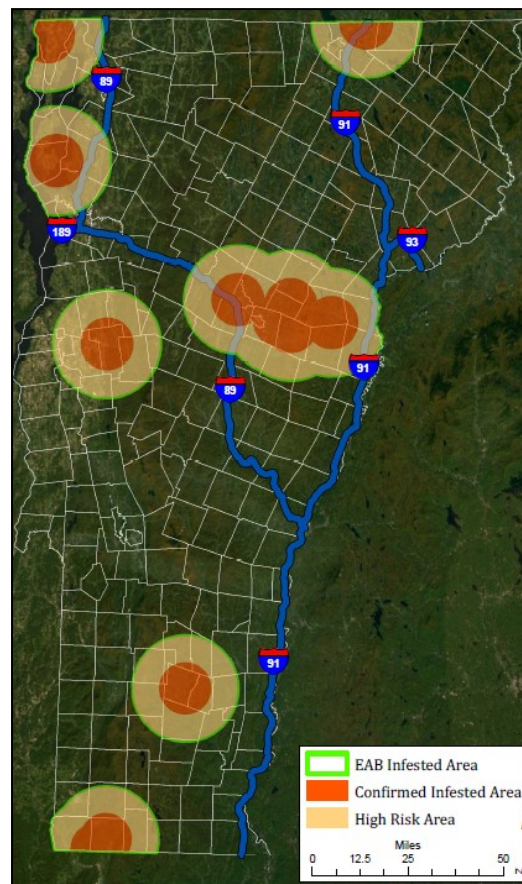
A Very Short Break from Bad News about Exotic Beetles

We got through the month of September with no new detections of **emerald ash borer** (EAB), but by the first week of October a beetle from Londonderry was submitted by an arborist. A USDA identifier made it the first confirmed EAB in Windham County. Because of this detection, the [mapped area in Vermont](#) to which "[Slow-the-Spread](#)" recommendations apply now covers all of Londonderry, Windham and Landgrove, most of Jamaica, Winhall, Peru, Weston, Andover and Grafton and extends into Chester, Townshend, Stratton, Athens, Mount Tabor and Wardsboro.

October means that non-flight season [Recommendations to Slow the Spread of Emerald Ash Borer](#) are now in effect when moving ash from the infested area. With heating season underway, it's important to remember that untreated ash firewood should never be moved out of infested areas. While the infested area map shows that high risk areas for EAB include many towns, visibly infested trees still remain rare in Vermont. There's a lot of spread that hasn't happened yet, so there's a lot of spread to slow!

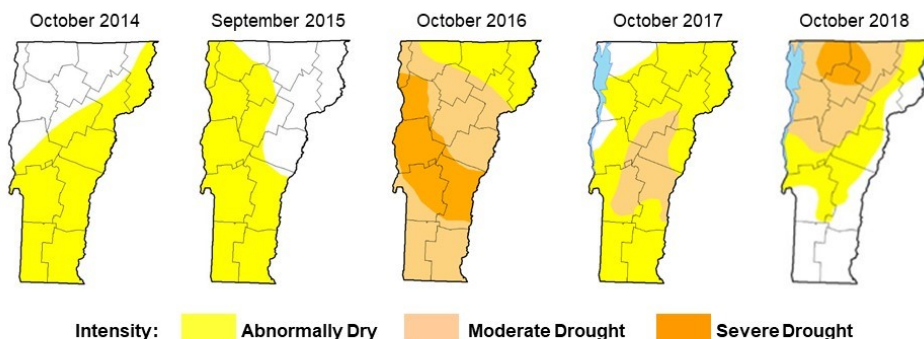
We plan to release emerald ash borer biocontrols next year and are looking for potential release sites. These should be in or near locations with visibly infested ash trees. Release sites should be one to a few acres in size with a significant ash component. We'd ask the landowner to leave the area uncut for a period of at least four years. Interested landowners or managers of sites that meet these criteria should contact barbara.schultz@vermont.gov.

Since EAB remained undetected in Vermont for ten years following the 2008 discovery south of Montreal, it may seem surprising that suddenly, within a space of 20 months, it's been confirmed in eight counties. There is a likely explanation. Although EAB can infest and kill healthy ash trees, it's well documented that, like most other metallic wood borers, [it prefers trees that are stressed](#). This is why girdled trap trees are a good detection tool. From 2014-2018 our growing seasons have been abnormally dry. While drought didn't carry EAB to Vermont, it likely allowed insect populations to build up quickly and spread.



In early October, EAB was confirmed in the town of Londonderry. Because EAB can rarely be found at low population densities, the [infested area map](#) indicates the likelihood of EAB based on where it has actually been observed.

US Drought Monitor



The sudden detection of many EAB locations since the first Vermont detection in February 2018 is likely due to recent dry growing seasons, which are favorable to the success of EAB and other beetles in the family Buprestidae. Map: NOAA/USDA/NDMC <http://droughtmonitor.unl.edu/>



Thank you for continuing to [reach out](#) to be sure suspects you observe are not emerald ash borer. One common native insect of ash is the [eastern ash bark beetle](#), which attacks stressed trunks and branches and is a frequent inhabitant of firewood piles. The egg galleries, produced by the adult females, resemble a child's bird-in-flight drawing. Mating occurs in the center of the two "wings". The females lay eggs on both sides of the galleries, and when the larvae hatch, they feed vertically away from the egg gallery. This results in parallel frass-filled tunnels scoring the bark and sapwood. After pupation, adults emerge in the spring through small round holes.



The native eastern ash bark beetle creates egg galleries with two branches extending in opposite directions. The hatched larvae create vertical galleries. Photos: J. Laggis; Pest and Diseases Image Library, Bugwood.org

The USDA is proposing to lift its [pine shoot beetle](#) quarantine. Most of the northeast (including Vermont) is within the [quarantine area](#), so this rule has had limited impact on moving Vermont pine materials. As per the USDA announcement (see box) comments are invited through November 22nd.

An exotic insect from Europe, pine shoot beetle was first detected in Vermont in 1999. An active trapping program through 2005 recovered adult beetles in many Vermont counties. The insect has been seen tunneling in shoots, but we're not aware of any significant damage to native or non-native pines.

The maturation feeding of adult pine shoot beetles results in tunnels in pine shoots and causes shoot mortality. Photos: R. Kelley



APHIS Proposes to Lift the Domestic Pine Shoot Beetle Quarantine

Washington, D.C., September 20, 2019 – The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) is proposing to lift the domestic quarantine for pine shoot beetle. Eliminating this quarantine is in keeping with USDA's goal of reducing regulations that have outlived their usefulness.

Despite efforts to control pine shoot beetle since it was first detected in 1992, this pest, which only infests stressed and dying pine trees, is now found in 20 states in the northeast and north central parts of the country. Given the limited impact of interstate movement restrictions on the beetle's spread and the minimal damage this pest has caused to native pines, plantations, and nursery trade, we are proposing to remove the pine shoot beetle domestic quarantine. This action would allow the states to determine the best approach for managing the pest within their boundaries, relieve impacted businesses and individuals from having to comply with costly and burdensome restrictions, and allow APHIS to focus limited federal resources on higher risk pests.

APHIS will carefully consider all comments received. Beginning tomorrow, members of the public will be able to submit comments for 60 days, or until November 22, 2019 at: <http://www.regulations.gov/#!docketDetail;D=APHIS-2016-0065>



There is good news about **Asian longhorned beetle** (ALB). Several consecutive surveys have failed to locate any ALB in either Brooklyn or Queens. These are the only remaining areas under quarantine in New York City. The beetle may soon be considered eradicated in those areas. However, we continue to be on the lookout. Remember that the tunnels behind ALB exit holes extend straight into the wood. There's no question that the eggs do come first on an infested tree (unlike the chicken conundrum). If exit holes are from ALB, egg-laying pits will be present.

*Asian longhorned beetle tunnels extend straight into the wood from the exit hole. The distinctive egg laying pits show mandible ("tooth") marks around the edge (arrow).
Photos: Joe Boggs, Ohio State University, Bugwood.org*



*Balsam woolly adelgid can be hard to detect on trunks and shoots. A hand lens helps differentiate the white wool from pitch.
Photo: R. Kelley*



Also Observed in September

We're continuing to see fir mortality due to **balsam woolly adelgid**. Mild winters have allowed this insect to build up. Signs of the insect are often absent by the time tree mortality occurs.

On balsam fir Christmas trees, populations of **balsam gall midge** have increased from last year. Needles exposed to sun are more likely to be attacked. By this time in the season, most midge larvae have left the galls to spend the winter in the soil. The galled needles are turning brown and dropping.



After balsam gall midge has left galls, the needles turn brown and drop. Photo: R. Kelley



The **sumac gall aphid** is another foliage gall-maker that was reported in September. The galls may turn red earlier than sumac foliage, making the galls more noticeable. When aphids leave the galls they complete their life cycle in moss.

Crickets and **grasshoppers** seem more common than normal all over the state. The two insects are related (they are in the order Orthoptera), and their population fluctuations are often synchronous. Sometimes high grasshopper populations follow successive dry summers.

*Moss is an alternate host for the sumac gall aphid.
Photo: J. Halman*

Federal Noxious Weed List Spotlight: *Euphorbia terracina*, Geraldton Carnation Weed

Vermont's Noxious Weed Quarantine includes species listed as Class A (not native to Vermont, not known to occur in Vermont, and pose a serious threat), Class B (not native to Vermont, known to occur in Vermont and pose a serious threat), as well as those listed on the *Federal Noxious Weed List*. While many of these species on the Federal Noxious Weed List likely won't occur in Vermont, there are a few that have the potential. The objective of this series of articles is to draw attention to lesser known invasive species from the Federal Noxious Weed List, that can be found in the Northeast, and are, in fact, part of Vermont's Noxious Weed Quarantine.

This month's focal quarantine species is **Geraldton carnation weed** (*Euphorbia terracina*), also known as carnation spurge, false caper, and Terracina spurge. It is a member of the Spurge family (Euphorbiaceae) and is related to a number of *Euphorbia* species present in New England that are considered invasive, like leafy spurge (*Euphorbia esula*)—a species that causes an estimated economic loss of \$130 million per year in the United States.

Native to the Mediterranean climates of Africa, Europe, and Asia, its known distribution within the United States is limited. There was an accidental introduction in Pennsylvania and there are reports of the plant spreading throughout southern coastal California – potentially spread by a series of fires dispersing the seeds.

Geraldton carnation weed is a perennial shrub-like plant, growing 3+' in height. It has oblong green leaves that alternate on lower stems, and can be whorled or opposite just under the branches holding flowers. The stems can be green to red in color, and the basal stems are woody. The flowers are yellow-green in color, and form in a cup-like structure.

Geraldton carnation weed can be found in pastures, fields, grasslands, roadsides, riparian areas, coastal habitat, and disturbed areas adjacent to human activity. It forms dense patches of growth (monoculture), displacing native or crop species, and produces a toxic sap which makes it unappealing to livestock. The plants develop deep taproots that can sprout new plants. Mature plants produce seed capsules that can break open and eject seeds up to 16' from the parent plant. Seeds can be carried further distances by human or animal activity, in water, or as part of contaminated hay or seed. Most new infestations have been linked to the spread of seeds.

It is because of this invasive behavior, potential for spread, and impacts to agriculture and native vegetation, that the United States added Geraldton carnation weed to the Federal Noxious Weed List in 2010.



Geraldton carnation weed flowers develop within a cup-like structure. The plant's milky sap is toxic and irritating to the skin and eyes. Photo: Dan Horowitz, CC by NC 4.0.

To learn more about Geraldton carnation weed, check out these resources:

- [USDA Animal and Plant Health Inspection Service](#)
- [UC Davis Weed Control in Natural Areas in the Western United States](#)
- [Centre for Agriculture and Bioscience International](#)
- [USDA Plants Database](#)
- [California Invasive Plant Committee](#)
- [Queensland Government, Weeds of Australia](#)
- [USDA Federal Noxious Weed Disseminules](#)
- [Go Botany – Native Plant Trust](#)

September Invasive Plant Phenology

In a pilot project started this year, volunteers are keeping track of invasive plant phenology in order to time management treatments most effectively. Below is a summary of observations made from September 9-13th, 2019.

- Caledonia County**— Flowering: Japanese Knotweed; Ripe fruits: Honeysuckle; Leafed out: Common Buckthorn
- Chittenden County**— Fruit ripening: Japanese Barberry, Common Buckthorn; Fully seeded: Honeysuckle; Fruit forming: Asiatic Bittersweet; Tar Spots on leaves: Norway Maple.
- Essex County**— Flowering: Japanese Knotweed.
- Rutland County**— Flowering: Japanese Knotweed; Fully seeded: Honeysuckle.

If you are interested in taking part in the project, please contact: eliza-beth.spinney@vermont.gov.



For more information, contact the Forest Biology Laboratory at 802-565-1585 or:	Windsor & Windham Counties.....	Springfield (802) 289-0613
	Bennington & Rutland Counties.....	Rutland (802) 786-0060
	Addison, Chittenden, Franklin & Grand Isle Counties.....	Essex Junction (802) 879-6565
	Lamoille, Orange & Washington Counties.....	Barre (802) 476-0170
	Caledonia, Orleans & Essex Counties.....	St. Johnsbury (802) 751-0110

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